MEDICAL PRACTICE

Contemporary Themes

134 Battered Children: A Medical and Psychological Study

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Summary

A controlled investigation of 134 battered children showed that nearly half had serious injuries and 21 died. Sixty-five had been battered more than once, 20 had permanent neurological sequelae, a quarter were low birth weight babies, and 10 had serious congenital defects. Twenty-three had been previously admitted to hospital with failure to thrive and the overlap with physical neglect was considerable. Mortality and morbidity among their siblings was also high. Difficulties with the child were attributable to interaction with neurotic mothers.

The risk of battering diminishes after a child's second birthday. The establishment of specialized hospital teams to tackle the overall problem is suggested as a method of improving management. Prevention may lie in educating mothers in the basic physical and psychological requirements of children and overcoming their reluctance to avail themselves of medical care.

Introduction

Growing awareness of violence to infants dates from 1946, when Caffey[1] described the association between subdural haematomata and fractures of the long bones in young children. The recognition almost a decade later that such injuries could be inflicted by parents[2] and the coining of the emotive term "battered child syndrome"[3] stirred doctors in America to recognize the alarming frequency with which such children had mistakenly been regarded as accidentally injured. Interest was aroused in England after case reports[4] in 1963 and the British Paediatric Association's warning memorandum[5] in 1966, which helped define the problem and offered guide lines for treatment.

Despite clinical descriptions of battered children[3 6-10] and their parents[11-13] there has been no previous comprehensive and controlled study which has included both medical and psychological assessments. Because the correct diagnosis is often missed and doctors are still unsuspecting[14] this paper reports birth abnormalities, age, sex, types and degree of injury and their sequelae, and other important factors in 134 battered children.

Patients and Methods

Over two years 134 battered infants and children aged under 5 years and their parents were studied in detail. Fifty-three children who were admitted to hospital as emergencies other than on account of accident or trauma acted as a control group. The mothers' ages, areas of origin, and consultants referring were the same in both groups.

Procedure.—All parents were seen as soon as possible after their child's admission. The general health and behaviour of the child and his siblings were recorded by standardized psychiatric and psychological interview.[12 15] The medical notes were examined and the extent of the injuries recorded. All survivors were photographed and underwent full blood counts and skeletal surveys. Birth weights were recorded from maternity hospital notes. Eighty-four family doctors were asked to examine their records and 48 replied. The rest of the children had no doctor. The subscales (locomotor development, personal-social behaviour, hearing and speech, hand-eye co-ordination, and performance) on the Griffiths' Mental Development Scale[16] were measured in all children whose physical condition did not obviously entail brain damage.

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Results

Sex and Age.—Sixty-eight patients were boys and 66 (49%) were girls, and 110 were under 2 years (mean age 18·5 months). Emergency admissions to Birmingham Children's Hospital were significantly younger than non-emergency admissions ($\chi^2=79{\cdot}30$; D.F.=4; $P<0{\cdot}001$; fig. 1). Battered children were significantly younger than all other emergency admissions to the same hospital during 1971 ($\chi^2=9{\cdot}5$; D.F.=4; $P<0{\cdot}05$).

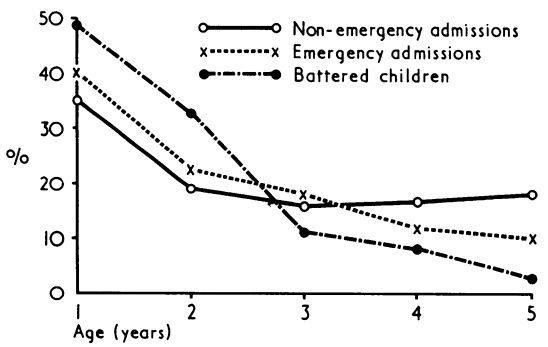

FIG. 1—Children under 5 years of age admitted to Birmingham Children's Hospital.

Bruises, Burns, and Scalds.—Thirty-eight children presented with conditions other than injuries. One-hundred-and-ten had bruises, most often on the head (75 cases) and thighs (45). Twenty-three had burns or scalds; in nine the buttocks and in six the lower limbs were affected, and injuries were most commonly caused by hot liquids or a metal stove. Cigarette burns occurred in two cases. Children with burns or scalds were older (mean age 24·8 months) than the remainder of the sample ($t=2{\cdot}35$; $P<0{\cdot}05$).

Fractures.—Forty-two children had recent or old fractures. The sites were skull (37 cases), humerus (19), radius and ulna (18), femur (17), tibia and fibula (17), other sites (28). Of those with burns 11 also had a fracture.

Intracranial and Intraocular Haemorrhages.—Forty-seven children had an intracranial haemorrhage—subdural in 30 cases, subarachnoid in nine, and cerebral in eight. Of these 15 had no skull fractures and seven no head bruises. Of the total sample eight had ocular damage in the form of intraocular haemorrhages, exudates, papilloedema, or retinal detachments.

SERIOUSNESS OF INJURY

Twenty-one children died, 20 had serious injuries resulting in permanent damage, 62 had serious injuries but no apparent permanent damage, and 31 had superficial injuries.

Fifty-nine children had to stay in hospital for up to one week, 16 for 2-4 weeks, and seven for five weeks or more. Forty-eight remained in hospital for non-medical reasons for at least one extra week and seven stayed for at least five weeks.

Six dead children compared with 25 live children had a sibling who had been battered. Seven dead children compared with 65 of the rest had been battered more than once. Neither difference was significant. Twelve parents were convicted of either murder or manslaughter. In nine cases the coroner reached an "open verdict," and these parents were not prosecuted.

COMPARISON WITH CONTROL CHILDREN

Abilities of Children.—Altogether 87 battered children were tested for mental development. Of these, 36 (27% of sample) had recovered from head injury (though the results of four cases were excluded because of serious congenital defects) and 51 (38%) had no injury other than bruising. Forty-one (31%) were untestable because of permanent damage and six (5%) were unavailable for testing. The mean general quotients on the Griffiths scales were 89 for battered and 97 for control children ($t=2{\cdot}79$; $P<0{\cdot}01$). Excluding those who recovered from their head injuries the contrast between battered children and controls was of smaller significance ($t=2{\cdot}03$; $P<0{\cdot}05$). Mean general quotients for battered children with head injuries from which they had clinically recovered and those without any head injuries were 87 and 90 respectively. Battered children tested after head iniury scored significantly lower than controls on personal-social, hearing and speech, and hand-eye co-ordination scales (fig. 2). There was no significant difference between battered children who had no head injuries and controls on the personal-social or hand-eye scales; only hearing and speech quotients were significantly lower for this subgroup of the battered sample The mean developmental quotients of battered children of low birth weight was 73 and of those with failure to thrive 78.

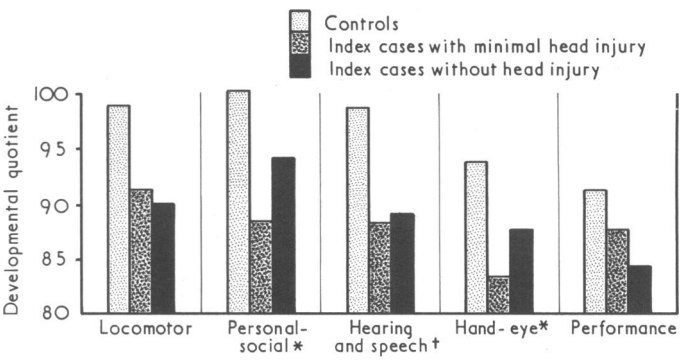

FIG. 2—Developmental quotients on Griffiths scale. Cases with relevant congenital defects were excluded from each group.
*Difference between controls and index cases with head injury are significant at 0·05 level.
†Differences between controls and index cases with head injury and between controls and index cases without head injury are significant at 0·05 level.

Physical Neglect and Failure to Thrive.—Twenty-two batterred children (16%) compared with one control (2%) were physically neglected on admission ($\chi^2=6{\cdot}51$; D.F.=1; $P<0{\cdot}05$), and 23 (17%) battered children compared with one (2%) control had previously been in hospital with failure to thrive ($\chi^2=6{\cdot}62$; D.F.=1; $P=0{\cdot}01$). Among the battered children failure to thrive occurred in 11 (50%) of the neglected children and 11 (10%) of the remainder ($\chi^2=17{\cdot}64$; D.F.=1; $P<0{\cdot}001$).

Birth Weight.—Of the battered children born in hospital 58 had normal birth weights, eight weighed between 2,000 and 2,500 g, and 11 weighed less than 2,000 g. The occurrence of low birth weight among the different social classes is shown in table I and compared with national norms.[17 18] In both upper and lower social classes the prevalence of low birth weight among the battered sample born in hospital was four times greater than the national rate.

Number of Deceased Siblings.—Ten battered children had a deceased sibling. Four of these had died under "suspicious" circumstances. In two cases more than one sibling had died. None of the controls had a deceased sibling.

TABLE I—*Percentage of Low Birth Weight Babies (<2,500 g) according to Social Class in Three Studies*

Social Class	Drillien[17]	Present Study	National Survey of Health and Development[18]
I and II	3·3	24	5·6
III	5·9		
IV and V	7·6	24	

Congenital Defects.—Altogether 7·46% (10) of the battered children had serious congenital defects as compared with 1·75% of the general population.[19] There were two cases each of spina bifida, hydrocephalus, and encephalocele and one each of Hirschsprung's disease, coeliac disease, congenital spherocytosis, and congenital dislocation of the hip. A further eight children had minor congenital abnormalities.

Precipitants.—Eighty mothers and 63 fathers initially denied inflicting injury but gave no adequate explanation of it, and 13 mothers and six fathers later changed their initial account into an adequate explanation of the injury. Battering incidents occurred equally in the morning (35 cases) and late afternoon (36). Thirty-one incidents occurred in the evening. Only five parents reported they battered the child late at night. Among mothers 16 had had a confinement less than three months previously, 56 between three and 12 months previously, and 62 more than 12 months before the battering incident.

Behaviour of Child and Neuroticism among Mothers.—Battered children were significantly less wakeful at night, excitable or lively, or tired during the day than the controls (table II). No significant differences were found in time of rising or going to bed or poor appetite. One child who failed to thrive was considered by its mother to have a feeding problem compared with 14 of those who did thrive. The difference was not significant.

TABLE II—*Comparison between Behaviour at Home of Battered Children and Control Children*

	Battered Children		Controls		Significance	
	No.	%	No.	%	χ^2	P
Wakeful at night (½ hr or longer)	11/23	9	11/51	22	4·12	<0·05
Excitable or lively..	76/25	61	40/51	78	4·26	<0·05
Tired during day ..	49/124	39	31/51	61	5·76	<0·05
Rose 5-7 a.m. ..	38/123	31	16/51	31	0·01	N.S.
Went to bed 9-12 p.m.	30/123	24	15/51	29	0·25	N.S.
Poor appetite ..	15/124	12	7/51	14	0·00	N.S.
Crying a problem ..	39/107	36	4/48	8	11·69	<0·001

Forty (30%) mothers of battered children compared with five (9%) control mothers considered the child difficult ($\chi^2=8·40$; D.F.=1; P<0·01). Of the 40 mothers 30 (75%) were neurotic whereas only 29 (31%) of those who did not find their children difficult were ($\chi^2=16·21$; D.F.=1; P<0·001). Thirty-six (27%) mothers of battered children compared with four (8%) control mothers described their other children as difficult ($\chi^2=14·12$; D.F.=1; P<0·001). More (39; 29%) mothers of battered children—of whom 27 (69%) were neurotic—than control mothers (4; 8%) said crying, clinging, or whining behaviour was a severe problem ($\chi^2=11·49$; D.F.=1; P<0·001). Fewer of the mothers who did not find such behaviour a problem were neurotic—only 29 (31%) ($\chi^2=7·51$; D.F.=1; P<0·01).

Delay in Attending Hospital and Previous Contact with General Practitioners.—The parents of 82 battered children attended the hospital casualty department at least 24 hours after injury occurred. Eleven children with serious injuries (including some who later died from their injuries) were also presented after similar delay. According to the family doctor's reports no parent had made unnecessary visits. According to their own reports 113 had rarely or never consulted their general practitioner before battering their child.

Discussion

Some maintain that more boys than girls are battered,[11 22 23] but, along with others,[20 21] we have found equal numbers of both sexes. Several authors[23-26] suggest that younger children are particularly at risk. We have found that emergency admissions tend to be younger even if not battered. Nevertheless, battered children were significantly younger than other emergency admissions. Furthermore, most children were under 2 years of age and many had been previously battered, supporting suggestions that "any injury other than a road traffic accident to a child under 2 must be considered to be an instance of the battered baby syndrome."[14]

Our results confirm those of others who have shown that battered children have a multiplicity of injuries in various stages of healing.[3 10 20] Vague accounts—"must have knocked his head against the cot," "fell off the bed," "bruises easily,"—were offered as initial explanations by parents. In no case was a bleeding disorder detected. Bruising to the head or cheek, a black eye without gross bruising of the forehead, a "purple ear," or fading bruises of the ear and surrounding scalp were prominent features, supporting those who rate the head as an important site of trauma.[23 27]

Over a third of the children had an intracranial haemorrhage (usually subdural); many of these had no associated skull fractures, and 15% had no head bruising but showed instead minimal finger and thumb mark bruises on the trunk and arms. These children had been shaken violently, supporting Guthkelch's suggestions[28] that repeated acceleration/deceleration (whiplash injury) rather than direct violence accounts for intracranial bleeding. Diagnostic confusion also arose in those children with ocular damage. Here our findings concur with others[8 9] who have concluded that physical maltreatment must be stongly considered when intraocular haemorrhages, with or without an associated subdural effusion, occur.

BURNING

Though bruises, fractures, subdural haematoma, and malnutrition are being increasingly recognized as stigmata of baby battering little emphasis has been placed on child abuse by burning. Our finding that nearly one-fifth had serious burns or scalds and that such children were significantly older then the remainder of the sample supports suggestions that many incidents of child abuse by burning pass for accidents.[29] The importance of skeletal surveys (repeated two weeks later if negative) was shown by the fact that nearly half also had fractures. Cigarette burns were not common but burning of the buttocks or perineum by placing the child on a hot metal surface was a particularly striking feature—a finding also observed by Vesterdal.[30]

One-third of dead children had been battered previously and they had familiar injuries.[10 31] Most fatal injuries resulted from a single act of parental violence. A third had a sibling who had also been maltreated, and in 9% of cases the sibling had died—some under suspicious circumstances. These considerations should caution against the over-optimistic belief that only one child in a family is affected and emphasize the importance of considering care orders on siblings.

Adelson[6] and Emery[32] suggest that some "accidental" cases and "cot deaths" may be the results of parental assault. Sudden infant deaths are characterized by a long delay between the child last being seen alive and the discovery of death, illegitimacy, and low birth weight. Poor use of welfare services, poor living conditions, marital disharmony, and poor work records characterize the parents of such children.[33] Baby batterers share all these adversities.[15] Furthermore, half the sample of dead children were "discovered" after a delay of 24 hours or longer.

Mortality rates for children subjected to wilful violence vary among different series—less than 2%,[23] 3%,[7] 11%,[3] 25-30%,[34] and 55%.[30] Among our cases, after excluding cases where the parents had gone to prison, the rate was 8%—similar to that of Kempe[3] and Cooper.[35] Other series in this country have found higher rates.[36 37] The commonest cause of death in 0-4-year-olds are birth injuries, infections, and congenital abnormalities. Apart from "accidents," battering in Birmingham in 1971 ranked next above motor vehicle accidents as a cause of death.[38] But unless medical personnel overcome their reluctance to record a diagnosis of "battered child syndrome"[39] statistics will underestimate the problem. National statistics are also ham-

pered; in five of our patients who died in Birmingham in 1971 the coroner reached an "open verdict." Thus none appeared in the Registrar General's figures[40] for "homicides and injuries purposely inflicted" in 1971.

NEUROLOGICAL AND INTELLECTUAL IMPAIRMENT

Our findings support those of others[34 41] who showed that battering often results in permanent neurological impairment. Spasticity, paraplegia, blindness, and other neurological sequelae that required long term rehabilitation developed in 15% of our cases. One child developed West's syndrome (infantile spasms, subnormality, hypsarrhythmia) after violent shaking.

Our findings also show that battering leads to developmental retardation. Abnormality of social responsiveness and visuomotor co-ordination were found in those children who had suffered only slight head injuries. Such behaviour was, therefore, probably due to damage of the central nervous system and not to "frozen watchfulness" (gazing silently and fixatedly out of mistrust).[42] Because the capacity for showing mistrust develops slowly in early childhood[43] observations of frozen watchfulness in young babies may be misinterpretations. In older children immobility can be a normal reaction to a new experience such as admission to hospital.[43] Children in our sample were tested after adaptation to hospital, and only one child behaved mistrustfully throughout testing.

Regardless of head injury, language retardation was found in our sample. This has also been observed by Martin.[41]

Thirty-eight per cent of the sample were without head injury or neurological damage, but their overall ability was also significantly lower than that of the controls. This may have been due to previous head trauma or genetic endowment.[12] Parental neglect may result in congenitally defective babies of low birth weight who fail to thrive.[44] Lower developmental quotients were obtained by children having such handicaps. Only 22 battered children were without brain damage, head injury, low birth weight, or failure to thrive.

Considering that most parents offer no adequate explanation of the injury and that in about half the patients with cerebral palsy and mental deficiency attending paediatric outpatient departments no adequate cause is identified[45] the possibility that battering is responsible for a sizeable proportion needs further exploration.

The possibility that childhood marasmus represents an associated form of rejection should be strongly considered.[46 47] A significant proportion of our sample had been previously admitted to hospital because of failure to thrive and were physically neglected, supporting the suggestion that maltreatment of children is a spectrum ranging from infanticide to nutritional and emotional deprivation.[25 26 41 48] It is established that lack of calorie intake and deprivation of maternal affection[50] may impair growth and curtail intellectual development.[51]

A quarter of battered children born in hospital had low birth weights. This figure falls to 15% if we assume that babies born at home were of normal weight and compares with 5-7% in the general population.[18 19 44] Several authors[7 23 26] have asserted that low birth weight babies are particularly at risk from battering, and others[52 53] have interpreted this as failure of bonding due to separating the mother from her child during the neonatal period. Many low birth weight babies in our own and other series[7 23 26 53] may, however, be simply explained as reflecting those maternal characteristics that predispose to delivery of low birth weight babies—low social class, youthful and single status, and rejecting attitudes during pregnancy.[17 44] All these characteristics were prevalent in our sample.[15] Newson[54] has pointed out that responsiveness to a baby is not a simple matter of biological necessity but a general characteristic shared by many people who are not mothers. Furthermore, unfavourable mother-child relationships are related to undesirable maternal attitudes long before the neonatal period[55] and to personality abnormality.[56] Considering also that only a few babies weighed under 2,000 g at birth or required long-term separation from the mother it is unrealistic to expect that increased or improved maternal child contact after confinement[52 53] will substantially reduce the risk of subsequent battering.

MOTHER'S OBSTETRIC HISTORY

No support was found for suggestions that difficulties during pregnancy, labour, or after birth[13 23 25] are responsible. Most mothers had normal confinements and only a few babies were battered during the post-partum period. Indeed, many mothers had longstanding emotional and personality problems[12] and displayed rejecting attitudes towards their children irrespective of puerperal factors.[15]

Possibly some children are particularly at risk and unwittingly invite physical abuse from their parents.[57] Failure to take account of the fact that child-parent I.Q. correlations are low before the age of 3 years[58] and failure to use well validated tests such as the Griffiths developmental scales[59] may exaggerate the significance of clinical impressions that a child's intellectual endowment exceeds or falls short of the parents'.[41]

Our results show that battered children were in some respects lethargic. Difficult, especially crying or clinging, behaviour was encountered by the mothers and may have precipitated battering. After being some time in hospital, however, they were no more irritable than the controls. Thus, difficult behaviour probably results from interaction with a neurotic mother.[60] Our results bear this out.

Kempe[24] has asserted that in the prodromal stages mothers often and recurrently bring their infants with non-existent complaints and that family doctors are slow to identify and refer suspected cases.[23] We found, however, that no mother had made an unnecessary visit to her family doctor before the battering of her child. Indeed family doctors are unlikely to see more than one case in five years.[61] More characteristic was the long delay between injury and arrival at hospital, a factor also observed in other studies.[11 22]

Conclusion

In terms of morbidity and mortality the battered child is a problem of major concern to society. Child abuse has elicited spasmodic public concern for nearly a century, and yet no child protection service has developed that adequately meets the problem. It almost seems as if the medical profession has abdicated its responsibility to local authorities and voluntary organizations, whose roles in some respects are complementary but in others may not always be harmonious. Both agencies rely heavily upon inexperienced and possibly inadequately trained social workers who are as yet ill-equipped to deal with these difficult cases. The past year has again witnessed a depressing number of children who have been battered to death after decisions by social workers to return the child home. Our findings indicate that such authority should be curtailed. Indeed, there seems to be a strong case for setting up specialized hospital teams to carry out full assessment, giving priority to the safety and healthy development of the child.

We cannot predict which individual child will be battered. Nevertheless, our results[12 15 46] broadly delineate those groups in the community in which child abuse is most likely to occur. Prevention must rely on adequately designed, intensive education in children's needs and development during and after the antenatal stage. The high proportion of abnormalities at birth in our sample stresses the need to persuade these mothers to avail themselves of medical care. Without expert approaches to both these problems nearly all abused children are at risk of phsyical, educational, and social maldevelopment or death.

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Around Europe

School Health Education in Sweden*

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Introduction

In the autumn of 1973 I made a study tour in Sweden and Finland as a medical Fellow of the Council of Europe to investigate school health education, with special reference to human relationships and personal responsibility for health. This paper is a personal view of my findings and opinions of school health education in Sweden.

*Based on a report to the Public Health Division of the Council of Europe, 4 December 1973.

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Historical Background

Sweden has a well-established tradition of social commitment with a broad and progressive educational system, and health education forms an integral part of the school curriculum. A study of the development of sex education shows how a relationship between doctors and teachers can influence government and how a continuous assessment of results can modify methods. In the early part of the century some doctors and commentators drew attention to the lack of knowledge about sex in the population,[1] and this lead in 1933 to legislation to provide compulsory sex education in all secondary schools. But it was not until three years later that training was made available to teachers.

Sex education became obligatory in all school grades in 1956; it was accompanied by an official handbook for teachers and a